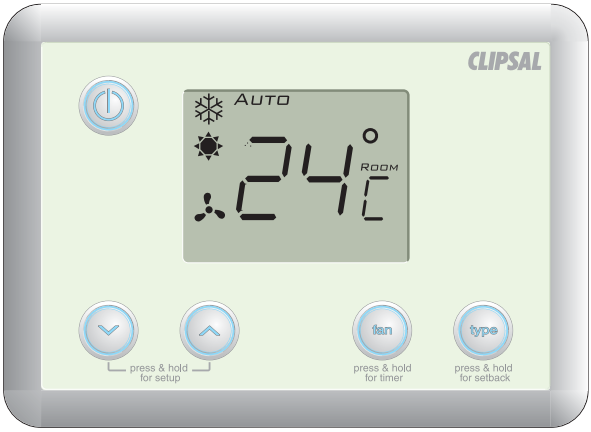
CLIPSAL
LIVING ELECTRICAL

C-Bus Single Zone Thermostat

Installation Instructions

5070THB Series

TWO YEAR WARRANTY 2



CLIPSAL C-Bus Control and Management System

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1.0 Product Range

Catalogue No.	Product	Built-in HVAC Control Relays
5070THB	C-Bus Single Zone Thermostat	×
5070THBR		✓

2.0 Important Notes

- Ensure the temperature sensor is mounted in a position suitable for measuring the environment being temperature controlled. This applies to the 5070THB Series' internal sensor or to an external C-Bus temperature sensor (whichever is utilised).
- A C-Bus network must be connected to the 5070THB Series unit, to provide power and a C-Bus system clock.
- When the 5070THB Series unit is connected to HVAC equipment, do not press the power button until C-Bus programming is complete.

3.0 Description

The 5070THB Series C-Bus Single Zone Thermostat is used to control heating/ventilation/air conditioning (HVAC) equipment, regulating the air temperature of a particular environment.

The 5070THBR model has built-in relays that can be connected to HVAC equipment which uses a standard 24 V AC RWG interface. The 5070THB model connects to HVAC equipment via an external C-Bus Relay unit (such as the 5508RVF). Apart from this, both models have the same features.

The air temperature is monitored by the unit's internal temperature sensor or optionally via an external C-Bus temperature sensor.

Figure 1 shows the system connection of a 5070THBR. A 5500PS C-Bus Power Supply is used to provide a basic C-Bus network.

In Figure 2, a 5508RVF C-Bus Voltage Free Relay is used to provide the C-Bus power supply, system clock and burden for the 5070THB. It also provides the relays which interface with the HVAC equipment.

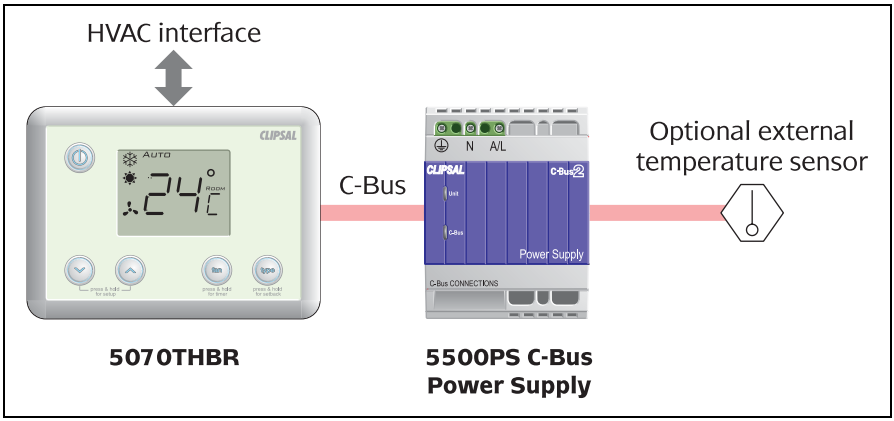


Figure 1 - The 5070THBR has built-in relays to connect to an HVAC system

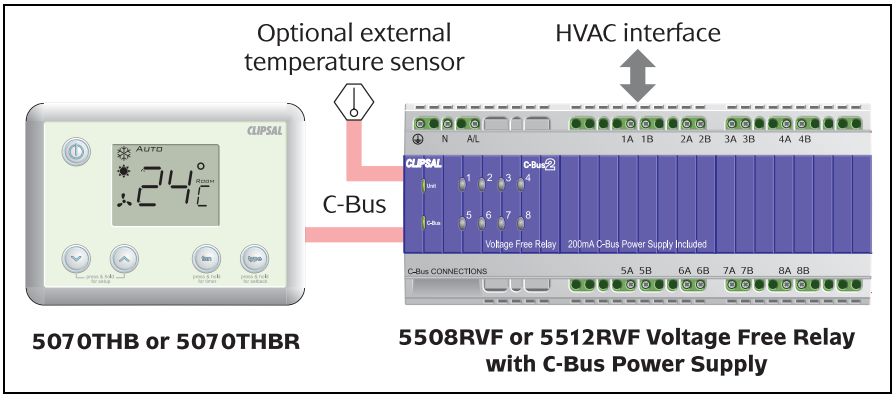

Optional external temperature sensor
HVAC interface
C-Bus
5070THB or 5070THBR
5508RVF or 5512RVF Voltage Free Relay with C-Bus Power Supply

Figure 2 - The 5070THB connects to an HVAC system via external C-Bus relays

4.0 Installation Considerations

It is important to select the right location to install the 5070THB Series C-Bus Single Zone Thermostat, particularly if the internal temperature sensor is used. Some considerations are listed below:

- Provide easy access to the unit for operation by the user.
- Choose a location free of water, high humidity, direct sunlight and heavy dust. Avoid close proximity to HVAC outlets.
- Do not cover the unit or block its air vents.
- The C-Bus Single Zone Thermostat is designed for indoor use only.
- Ensure the unit (if the internal temperature sensor is used) or external temperature sensor is mounted in a position suitable for measuring the environment being temperature controlled.

no wet hands | no cleaner spray | no coverage | no direct sunshine | no dust

5.0 Mounting Instructions

It is recommended you use a standard 84 mm centre mounting C-Clip or wall box (such as the Clipsal E157) to mount the 5070THB or 5070THBR. Alternatively, surface mount the unit using appropriate fixing hardware. Do not recess the unit into a wall, as the side air vents must be exposed.

Mounting diagrams are provided in Figures 3 and 4. To mount the unit:

1) Insert a flat head screw driver into the notches at the bottom of the Thermostat and gently pry the base plate off the unit.
2) Prepare the mounting surface using a wall box, C-Clip, or other fixing hardware.
3) Place the base plate over the C-Clip or wall box, and feed the cables through.
4) Screw the base plate to the mounting surface.
5) Wire the appropriate conductors to the terminals.
6) Align the Thermostat over the base plate and push to reattach.

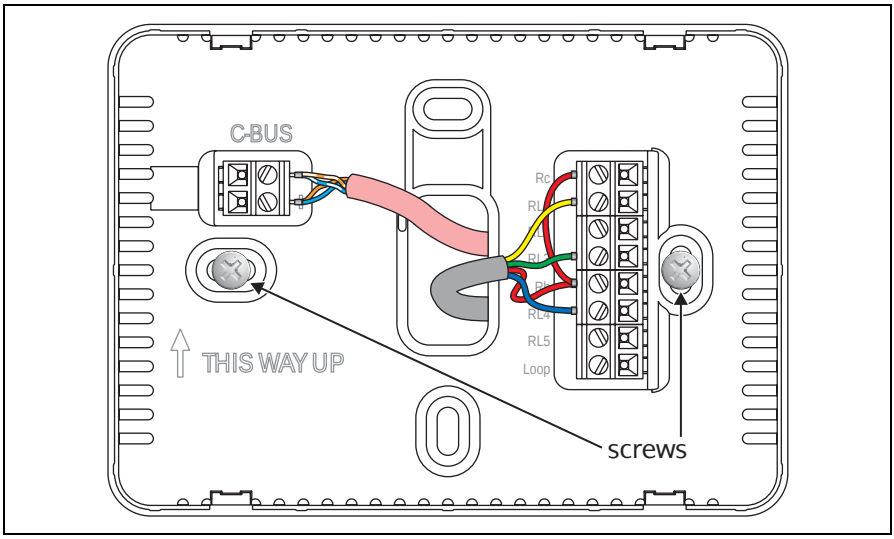


Figure 3 - Mounting the 5070THBR base plate (C-Bus and example HVAC wiring)

NOTE HVAC relay terminal wiring will vary depending on the HVAC system installed.

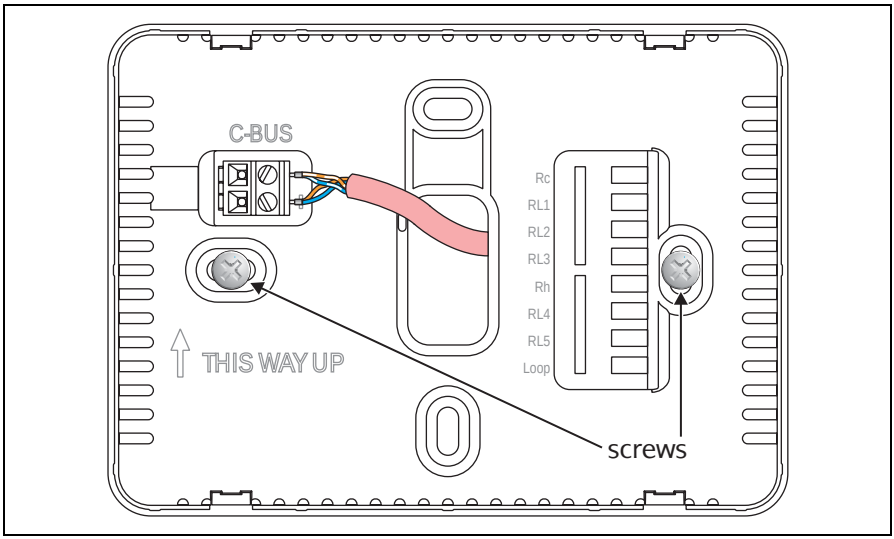
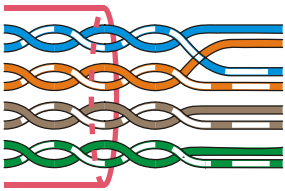


Figure 4 - Mounting the 5070THB base plate (C-Bus wiring)

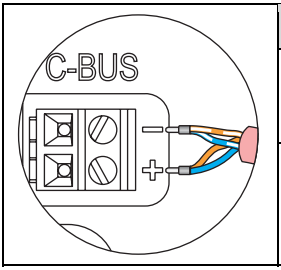
6.0 C-Bus Network Connection

Connection to the C-Bus network is made via the dual terminal connector on the inside of the base plate. Use Cat-5 Unshielded Twisted Pair (UTP) C-Bus cable. The use of bootlace ferrules (crimps) is recommended for reliable connection.

C-Bus cable conductor assignments and connector pinouts are shown below. The Remote ON and Remote OFF conductors are not connected to this unit. The Clipsal catalogue number for the C-Bus Cat-5 UTP cable is 5005C305B.



C-Bus Positive: blue + orange
C-Bus Negative: blue & white + orange & white
Remote OFF: brown + brown & white
Remote ON: green + green & white



Terminal	C-Bus Connection	Conductors
⊖	C-Bus Negative (-)	blue & white
		orange & white
⊕	C-Bus Positive (+)	blue
		orange

7.0 C-Bus Power Requirements

5070THB Series C-Bus Single Zone Thermostats draw 40 mA from the C-Bus network. Adequate C-Bus Power Supply Units must be installed to support connected devices. The Network window of a C-Bus Toolkit project provides a summary of a C-Bus network according to the units added to the Database. This can be helpful in determining the power supply requirements of a particular network.

8.0 HVAC Connection

WARNING Incorrect wiring of the HVAC equipment could cause damage to the HVAC equipment or 5070THB Series unit. Refer to the HVAC installation instructions before connecting.

There are two stages in interfacing the 5070THB Series C-Bus Single Zone Thermostat with HVAC equipment; the physical wiring and C-Bus programming.

The Thermostat can be wired to HVAC equipment which uses a standard air conditioning RWG/RWGY control interface. It can also be wired to some other HVAC systems, depending on their wiring (refer to the manufacturer's wiring diagram or application notes).

Connection scenarios for standard RWG/RWGY systems are provided in Figures 5 to 9. They use a 5070THBR (with built-in relays). In each case a 5070THB and C-Bus Voltage Free Relay combination may be used instead. The 5070THBR provides 5 × relay channels (RL1, RL2 and RL3 looped to Rc; RL4 and RL5 looped to Rh). An external C-Bus Voltage Free Relay may be used to provide any additional relay channels.

These scenarios are examples only; refer to the HVAC installation instructions for wiring details specific to your system.

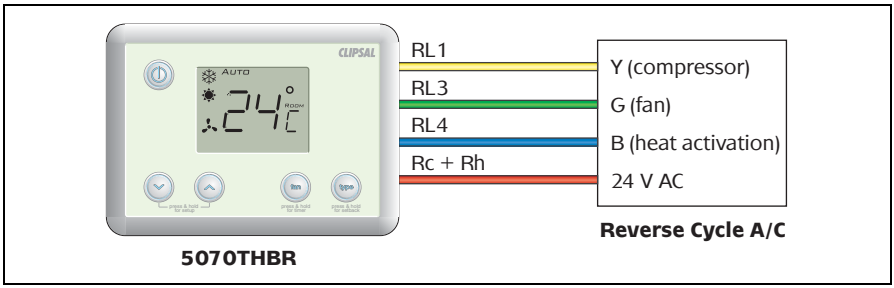


Figure 5 - Connecting to a reverse cycle A/C which uses RWG control

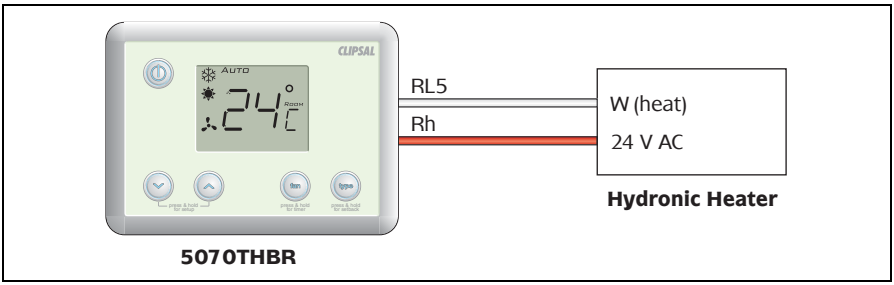


Figure 6 - Connecting to a hydronic heating system which uses RWG control

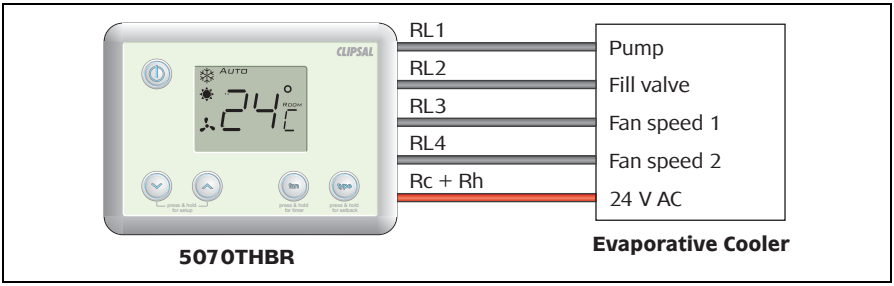


Figure 7 - Connecting to an evaporative cooler which uses RWG control

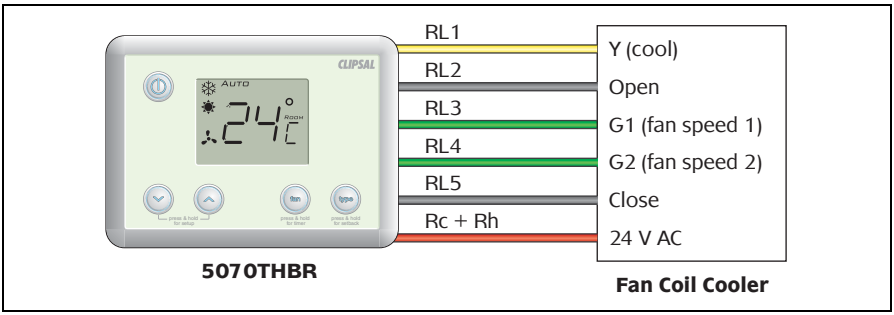


Figure 8 - Connecting to a fan coil cooling system which uses RWG control

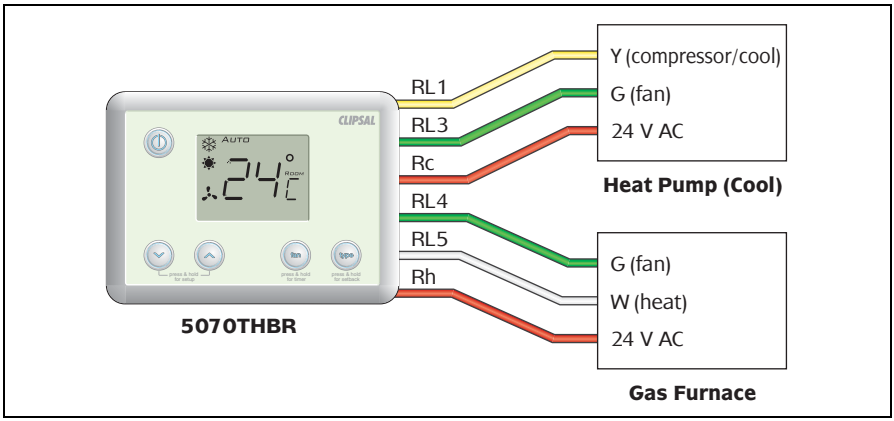


Figure 9 - Connecting to separate RWG based cooling and heating systems

Figures 10 and 11 show the interfacing of a fan coil A/C system which does **not** use standard RWG control.

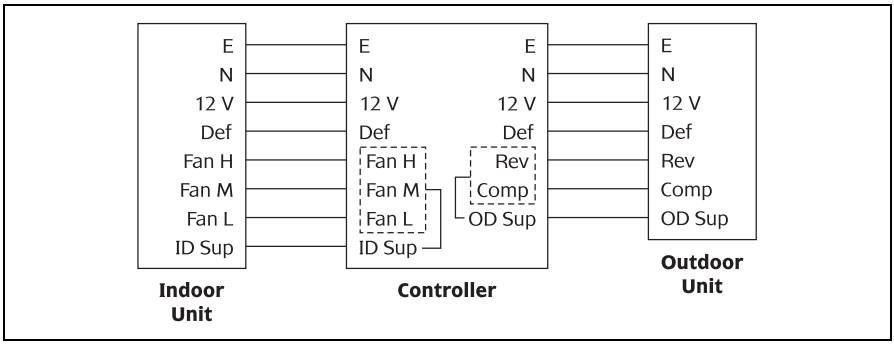


Figure 10 - An example A/C system without standard RWG control

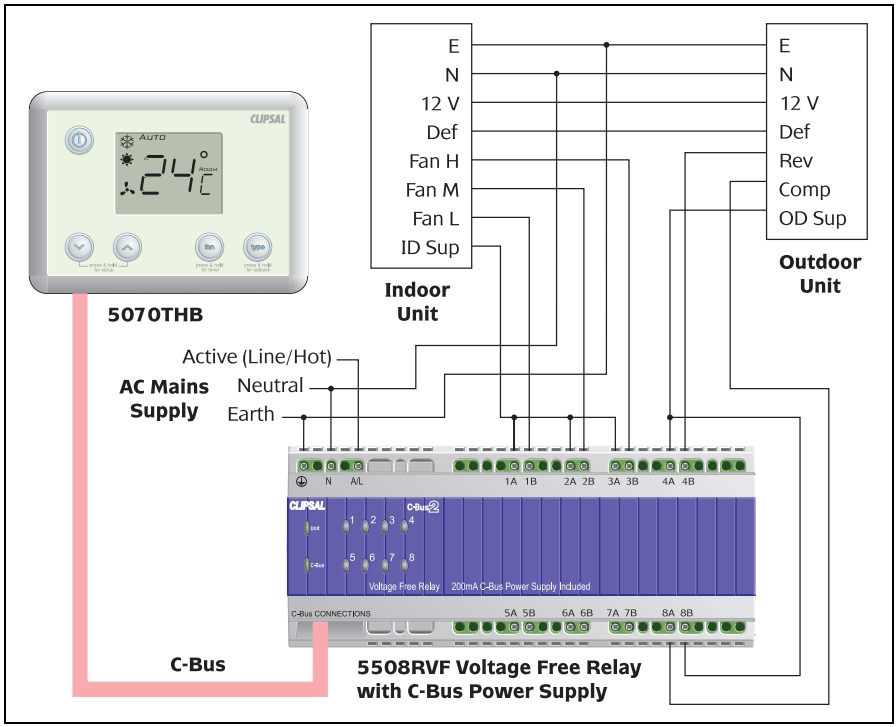


Figure 11 - Connecting to the A/C system shown in Figure 10

9.0 Megger Testing

Important points when megger testing an electrical installation:

- Only megger test when mains cabling is disconnected from C-Bus output units.
- Do not megger test the C-Bus cable.

10.0 C-Bus Programming

WARNING

Incorrect programming of the 5070THB Series C-Bus Single Zone Thermostat could cause damage to the 5070THB unit or HVAC equipment.

When the 5070THB Series unit is connected to HVAC equipment, do not press the power button until C-Bus programming is complete.

Before the 5070THB Series C-Bus Single Zone Thermostat can be used to control the HVAC system, it must be configured using the C-Bus Toolkit software. C-Bus Toolkit is available from the Downloads section of the Clipsal Integrated Systems (CIS) web site (http://www.clipsal.com/cis).

Using C-Bus Toolkit, you must:

- give the Thermostat a unique unit address
- configure the Plant settings; including groups for the internal relays (5070THBR model), fan control, cooling, heating, etc. appropriate for the plant type
- configure the Temperature Control settings.

You can also customise various settings on the User Interface and Temperature Control tabs, such as backlight levels, and temperature guard settings.

Refer to the C-Bus Toolkit Help documentation for information on the settings (click the Help button from the relevant tab when editing the Thermostat within Toolkit).

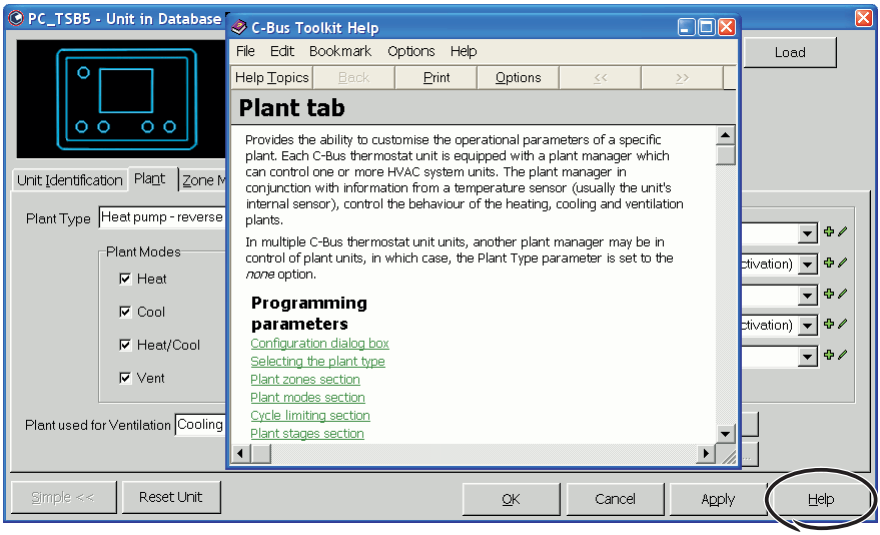

PC_TSB5 - Unit in Database
C-Bus Toolkit Help
File Edit Bookmark Options Help
Help Topics Back Print Options << >>
Plant tab
Provides the ability to customise the operational parameters of a specific plant. Each C-Bus thermostat unit is equipped with a plant manager which can control one or more HVAC system units. The plant manager in conjunction with information from a temperature sensor (usually the unit's internal sensor), control the behaviour of the heating, cooling and ventilation plants.
In multiple C-Bus thermostat unit units, another plant manager may be in control of plant units, in which case, the Plant Type parameter is set to the none option.
Programming parameters
Configuration dialog box
Selecting the plant type
Plant zones section
Plant modes section
Cycle limiting section
Plant stages section
Load
Unit Identification
Plant
Plant Type
Heat pump - reverse
Plant Modes
Heat
Cool
Heat/Cool
Vent
Plant used for Ventilation
Cooling
Simple <<
Reset Unit
OK
Cancel
Apply
Help

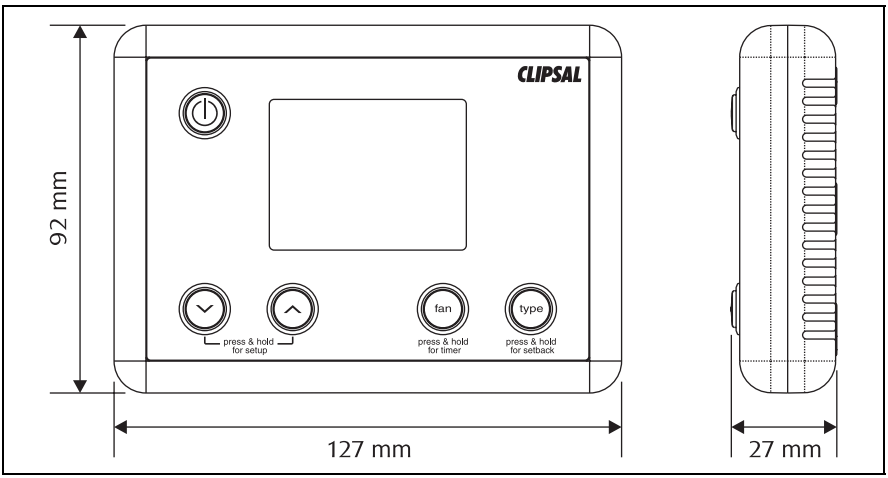
Figure 12 - Click the Help button for help with configuring the tab's settings

11.0 Electrical Specifications

Parameter	Description
C-Bus supply voltage	15 to 36 V DC, 40 mA Does not provide current to the C-Bus network
C-Bus AC input impedance	50 kΩ @ 1 kHz
Relays (5070THBR model)	Each relay rated at 2 A @ 24 V AC
C-Bus connection	One terminal block to accommodate 0.2 to 1.3 mm^2 (24 to 16 AWG)
Temperature sensor accuracy	+/− 0.5 °C (+/− 0.9 °F)
Operating temperature	− 10 to 50 °C (14 to 122 °F)
Operating humidity	10 to 95% RH

12.0 Mechanical Specifications

Parameter	Description
Dimensions (W × H × D)	127 × 92 × 27 mm
Mounting Centres	84 mm (horizontal) 60.3 mm (vertical)
Weight (models with stainless steel facia)	5070THBSS: 265 g 5070THBRSS: 280 g



13.0 Standards Complied

DECLARATIONS OF CONFORMITY

Australian/New Zealand EMC & Electrical Safety Frameworks and Standards
Model 5070THB and 5070THBR products comply with the following:

Standard	Title
AS/NZS CISPR 14-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emissions
AS/NZS CISPR 15	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
AS/NZS CISPR22	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement

European Standards
Model 5070THB and 5070THBR products comply with the following:

Standard	Title
BS EN 60669-2-1	Switches for household and similar fixed electrical installations – Part 2: Particular requirements – Section 1: Electronic switches
EN 55014-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Emissions
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 55022	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement

USA Standards
Model 5070THB and 5070THBR products comply with the following:

Standard
FCC Part 15 Radio Frequency Devices, Subpart B for unintentional radiators.

Other International Standards

Model 5070THB and 5070THBR products comply with the following:

Standard	Title
IEC 60669-2-1	Switches for household and similar fixed electrical installations – Part 2: Particular requirements – section 1: Electronic switches
CISPR 14-1	Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 1: Emissions
CISPR 15	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
CISPR 22	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement

14.0 Warranty

5070THB Series C-Bus Single Zone Thermostats carry a two year warranty against manufacturing defects.

Warranty Statement

1) The benefits conferred herein are in addition to, and in no way shall be deemed to derogate; either expressly or by implication, any or all other rights and remedies in respect to Clipsal Integrated Systems Product, which the consumer has under the Commonwealth Trade Practices Act or any other similar State or Territory Laws.
2) The warrantor is Clipsal Australia Pty Ltd of 12 Park Terrace, Bowden, South Australia, 5007. Telephone (08) 8345 9500. With registered offices in all Australian States.
3) This Clipsal Integrated Systems Product is guaranteed against faulty workmanship and materials for a period of two (2) years from the date of installation.
4) Clipsal Australia Pty Ltd reserves the right, at its discretion, to either repair free of parts and labour charges, replace or offer refund in respect to any article found to be faulty due to materials, parts or workmanship.
5) This warranty is expressly subject to the Clipsal Integrated Systems Product being installed, wired, tested, operated and used in accordance with the manufacturer's instructions.
6) All costs of a claim shall be met by Clipsal Australia Pty Ltd, however should the product that is the subject of the claim be found to be in good working order, all such costs shall be met by the claimant.
7) When making a claim, the consumer shall forward the Clipsal Integrated Systems Product to the nearest office of Clipsal Australia Pty Ltd with adequate particulars of the defect within 28 days of the fault occurring. The product should be returned securely packed, complete with details of the date and place of purchase, description of load, and circumstances of malfunction.

For all warranty enquiries, contact your local Clipsal sales representative. The address and contact number of your nearest Clipsal Australia office can be found at http://www.clipsal.com/locations or by telephoning Technical Support (refer to the back page).

Technical Support and Troubleshooting

For further assistance in using this product, consult your nearest Clipsal Integrated Systems (CIS) Sales Representative or Technical Support Officer.

Technical Support Contact Numbers	
Australia	1300 722 247 (CIS Technical Support Hotline)
New Zealand	0800 888 219 (CIS Technical Support Hotline)
Northern Asia	852 2484 4157 (Clipsal Hong Kong)
South Africa	(011) 314 5200 (C-Bus Technical Support)
Southern Asia	603 7665 3555 Ext. 236 or 242 (CIS Malaysia)
United Kingdom	0870 608 8 608 (Schneider Electric Support)

Technical Support email: techsupport.cis@clipsal.com.au
Sales support email: sales.cis@clipsal.com.au

Worldwide contacts are provided at http://www.clipsal.com/locations/
Information and resources are provided at http://www.clipsal.com/cis/

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